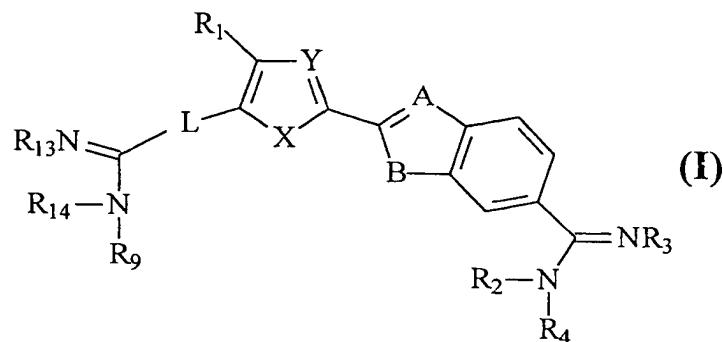


THAT WHICH IS CLAIMED IS:

1. A compound of Formula I:



(I)

wherein:

X is selected from the group consisting of O, S, and NH;

Y is CH or N;

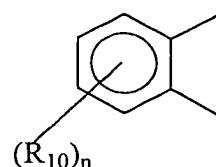
A is CH or N;

B is selected from the group consisting of NH, O or S;

R<sub>1</sub> is selected from the group consisting of H, loweralkyl, halogen, oxyalkyl, oxyaryl, and oxyarylakyl;

R<sub>2</sub> and R<sub>9</sub> are each independently selected from the group consisting of H, H<sub>2</sub>, hydroxy, lower alkyl, cycloalkyl, aryl, alkylaryl, alkoxyalkyl, hydroxycycloalkyl, alkoxycycloalkoxy, hydroxyalkyl, aminoalkyl and alkylaminoalkyl; and

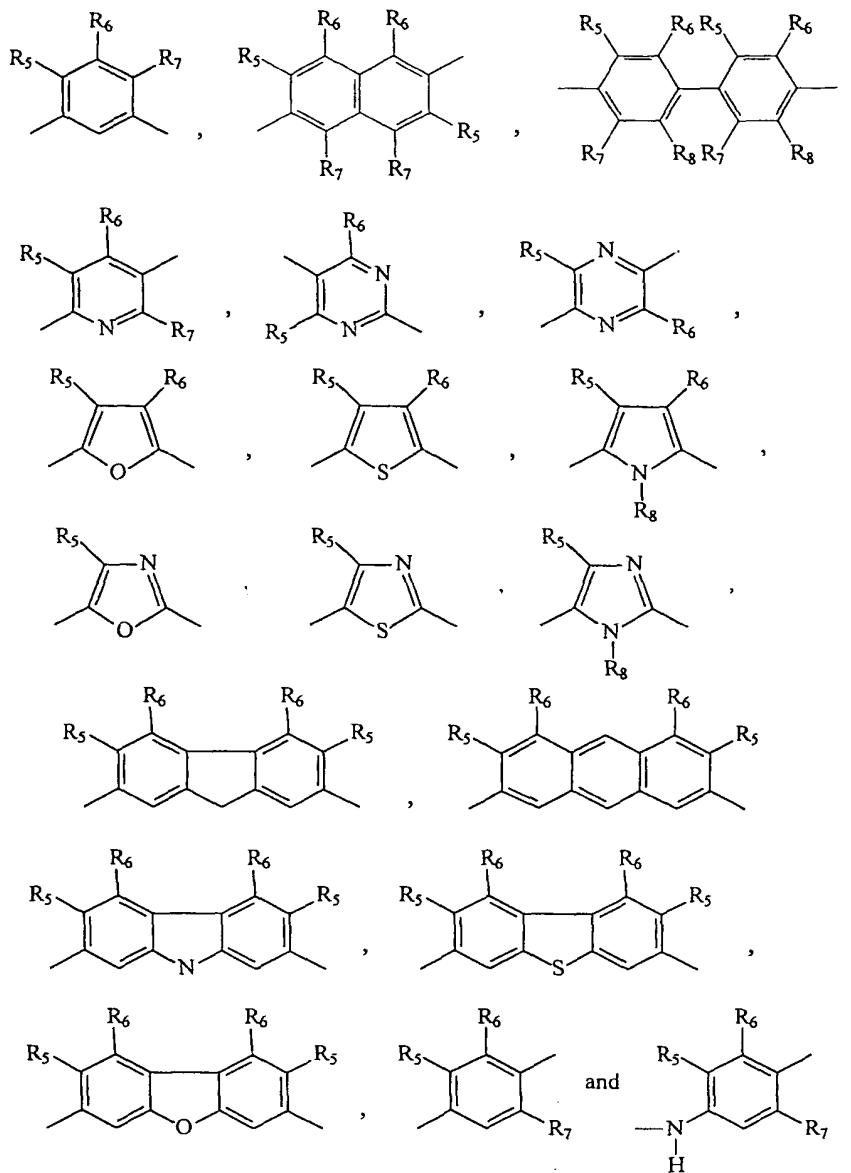
R<sub>3</sub>, R<sub>4</sub>, R<sub>13</sub> and R<sub>14</sub> are each independently selected from the group consisting of H, lower alkyl, alkoxyalkyl, cycloalkyl, aryl, alkylaryl, hydroxyalkyl, aminoalkyl, and alkylaminoalkyl, or R<sub>3</sub> and R<sub>4</sub> together or R<sub>13</sub> and R<sub>14</sub> together represent a C<sub>2</sub> to C<sub>10</sub> alkyl, hydroxyalkyl, or alkylene, or R<sub>3</sub> and R<sub>4</sub> together or R<sub>13</sub> and R<sub>14</sub> together are:



wherein n is a number from 1 to 3, and R<sub>10</sub> is H or -CONHR<sub>11</sub>NR<sub>15</sub>R<sub>16</sub>, wherein

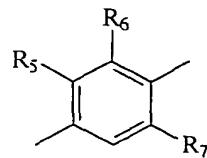
R<sub>11</sub> is lower alkyl and R<sub>15</sub> and R<sub>16</sub> are each independently selected from the group consisting of H and lower alkyl;

L is selected from the group consisting of:



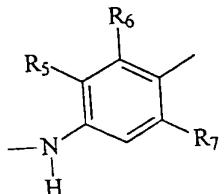
wherein R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, and R<sub>8</sub> are each individually selected from the group consisting of H, alkyl, halo, aryl, arylalkyl, aminoalkyl, aminoaryl, oxoalkyl, oxoaryl, and oxoarylalkyl; and wherein said compound of Formula I binds the minor groove of DNA as a dimer.

2. The compound of Formula I, wherein L is:



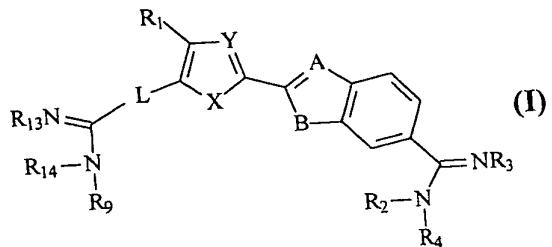
A is N, B is NH, X is O, Y is CH, R<sub>1</sub>, R<sub>2</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub> and R<sub>14</sub> are each H, and R<sub>3</sub> and R<sub>13</sub> are each H<sub>2</sub>.

3. The compound of Formula I, wherein L is:



A is N, B is NH, X is O, Y is CH, R<sub>1</sub>, R<sub>2</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub> and R<sub>14</sub> are each H, and R<sub>3</sub> and R<sub>13</sub> are each H<sub>2</sub>.

4. A method of binding mixed sequence DNA comprising contacting a sample DNA with a compound of Formula (I):



wherein:

X is selected from the group consisting of O, S, and NH;

Y is CH or N;

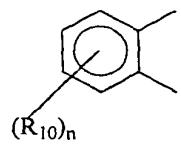
A is CH or N;

B is selected from the group consisting of NH, O or S;

R<sub>1</sub> is selected from the group consisting of H, loweralkyl, halogen, oxyalkyl, oxyaryl, and oxyarylakyl;

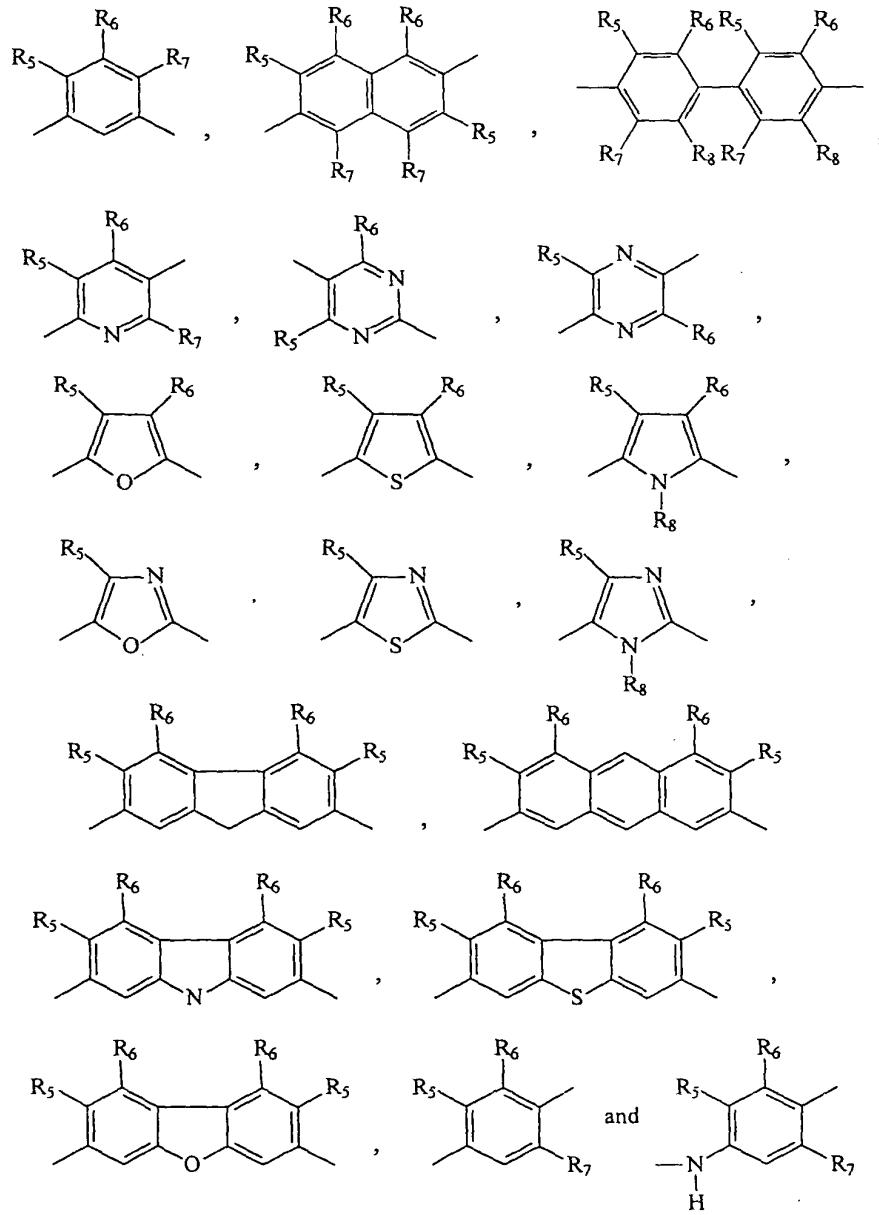
R<sub>2</sub> and R<sub>9</sub> are each independently selected from the group consisting of H, H<sub>2</sub>, hydroxy, lower alkyl, cycloalkyl, aryl, alkylaryl, alkoxyalkyl, hydroxycycloalkyl, alkoxycycloalkoxy, hydroxyalkyl, aminoalkyl and alkylaminoalkyl; and

R<sub>3</sub>, R<sub>4</sub>, R<sub>13</sub> and R<sub>14</sub> are each independently selected from the group consisting of H, lower alkyl, alkoxyalkyl, cycloalkyl, aryl, alkylaryl, hydroxyalkyl, aminoalkyl, and alkylaminoalkyl, or R<sub>3</sub> and R<sub>4</sub> together or R<sub>13</sub> and R<sub>14</sub> together represent a C<sub>2</sub> to C<sub>10</sub> alkyl, hydroxyalkyl, or alkylene, or R<sub>3</sub> and R<sub>4</sub> together or R<sub>13</sub> and R<sub>14</sub> together are:



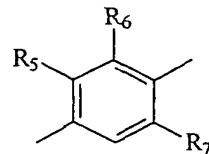
wherein n is a number from 1 to 3, and R<sub>10</sub> is H or -CONHR<sub>11</sub>NR<sub>15</sub>R<sub>16</sub>, wherein R<sub>11</sub> is lower alkyl and R<sub>15</sub> and R<sub>16</sub> are each independently selected from the group consisting of H and lower alkyl;

L is selected from the group consisting of:



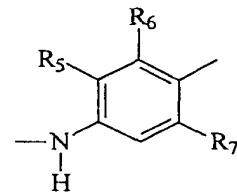
wherein R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, and R<sub>8</sub> are each individually selected from the group consisting of H, alkyl, halo, aryl, arylalkyl, aminoalkyl, aminoaryl, oxoalkyl, oxoaryl, and oxoarylalkyl; wherein said compound of Formula I binds the minor groove of DNA as a dimer.

5. The method of Claim 4 wherein L is:



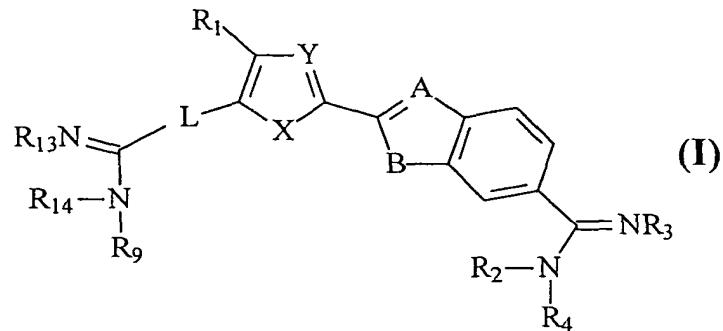
A is N, B is NH, X is O, Y is CH, R<sub>1</sub>, R<sub>2</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub> and R<sub>14</sub> are each H, and R<sub>3</sub> and R<sub>13</sub> are each H<sub>2</sub>.

6. The method of Claim 4, wherein L is:



A is N, B is NH, X is O, Y is CH, R<sub>1</sub>, R<sub>2</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub> and R<sub>14</sub> are each H, and R<sub>3</sub> and R<sub>13</sub> are each H<sub>2</sub>.

7. A method of detecting mixed sequence DNA comprising contacting a sample of DNA with a fluorescent compound of Formula (I):



wherein:

X is selected from the group consisting of O, S, and NH;

Y is CH or N;

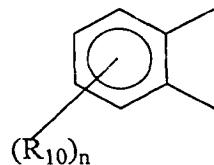
A is CH or N;

B is selected from the group consisting of NH, O or S;

R<sub>1</sub> is selected from the group consisting of H, loweralkyl, halogen, oxyalkyl, oxyaryl, and oxyarylakyl;

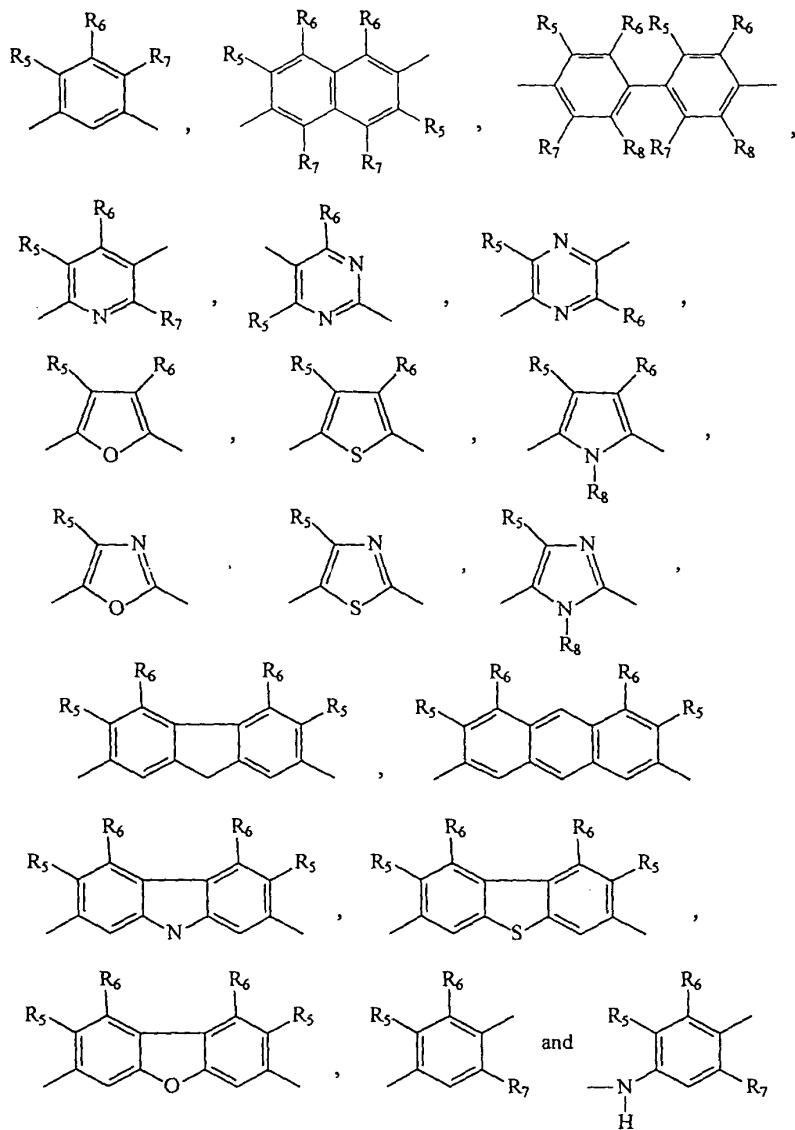
R<sub>2</sub> and R<sub>9</sub> are each independently selected from the group consisting of H, H<sub>2</sub>, hydroxy, lower alkyl, cycloalkyl, aryl, alkylaryl, alkoxyalkyl, hydroxycycloalkyl, alkoxycycloalkoxy, hydroxyalkyl, aminoalkyl and alkylaminoalkyl; and

R<sub>3</sub>, R<sub>4</sub>, R<sub>13</sub> and R<sub>14</sub> are each independently selected from the group consisting of H, lower alkyl, alkoxyalkyl, cycloalkyl, aryl, alkylaryl, hydroxyalkyl, aminoalkyl, and alkylaminoalkyl, or R<sub>3</sub> and R<sub>4</sub> together or R<sub>13</sub> and R<sub>14</sub> together represent a C<sub>2</sub> to C<sub>10</sub> alkyl, hydroxyalkyl, or alkylene, or R<sub>3</sub> and R<sub>4</sub> together or R<sub>13</sub> and R<sub>14</sub> together are:



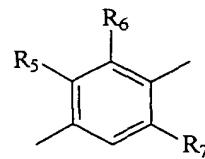
wherein n is a number from 1 to 3, and R<sub>10</sub> is H or -CONHR<sub>11</sub>NR<sub>15</sub>R<sub>16</sub>, wherein R<sub>11</sub> is lower alkyl and R<sub>15</sub> and R<sub>16</sub> are each independently selected from the group consisting of H and lower alkyl;

L is selected from the group consisting of:



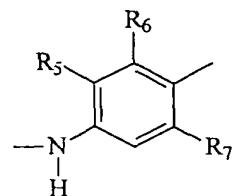
wherein R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, and R<sub>8</sub> are each individually selected from the group consisting of H, alkyl, halo, aryl, arylalkyl, aminoalkyl, aminoaryl, oxoalkyl, oxoaryl, and oxoarylalkyl; and wherein said compound of Formula I binds the minor groove of DNA as a dimer; and then observing fluorescence in the sample, the observation of fluorescence indicating the compound of Formula I has bound to a sequence of DNA.

8. The method of Claim 7, wherein L is:



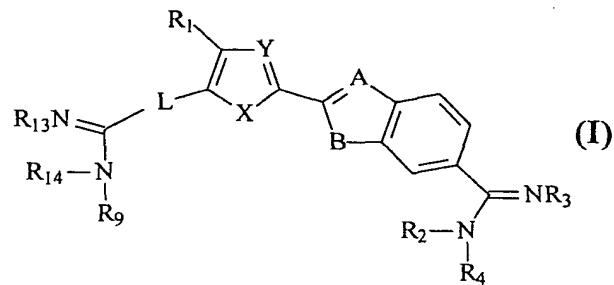
A is N, B is NH, X is O, Y is CH, R<sub>1</sub>, R<sub>2</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub> and R<sub>14</sub> are each H, and R<sub>3</sub> and R<sub>13</sub> are each H<sub>2</sub>.

9. The method of Claim 7, wherein L is:



A is N, B is NH, X is O, Y is CH, R<sub>1</sub>, R<sub>2</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub> and R<sub>14</sub> are each H, and R<sub>3</sub> and R<sub>13</sub> are each H<sub>2</sub>.

10. A pharmaceutical formulation comprising a compound of Formula I:



wherein:

X is selected from the group consisting of O, S, and NH;

Y is CH or N;

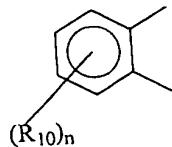
A is CH or N;

B is selected from the group consisting of NH, O or S;

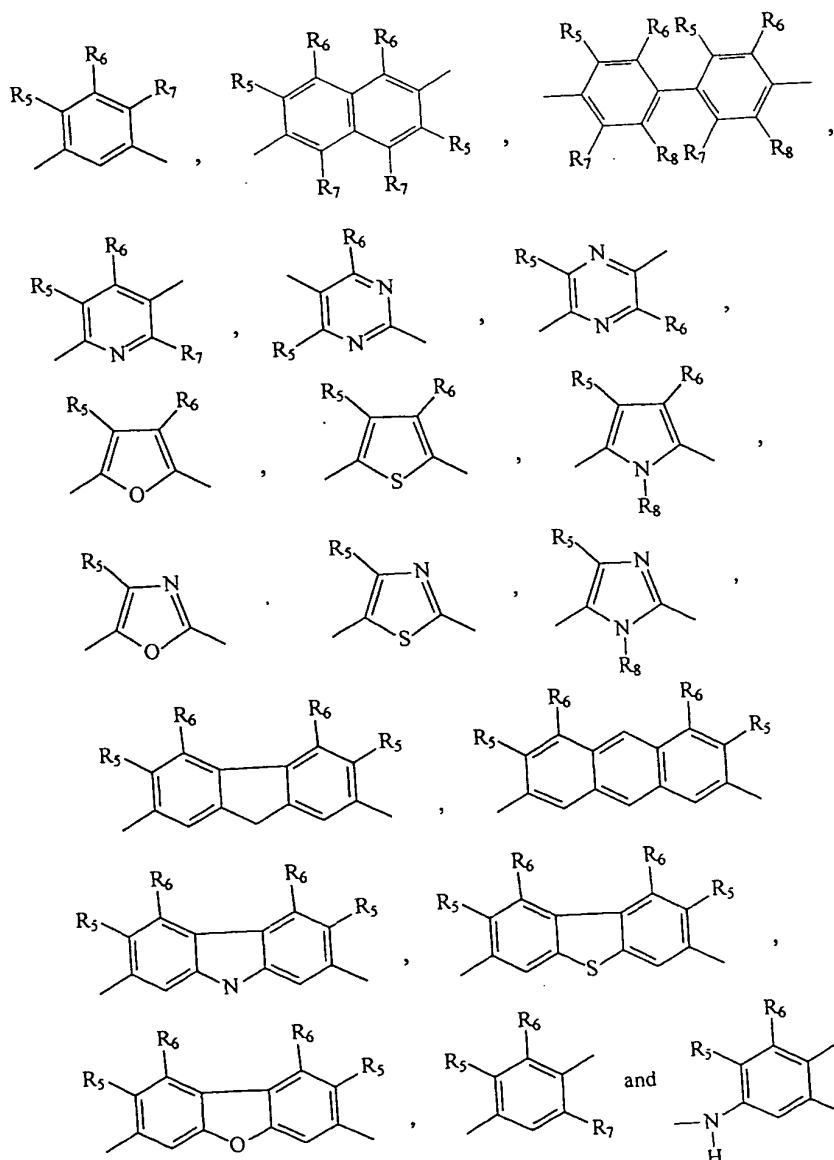
R<sub>1</sub> is selected from the group consisting of H, loweralkyl, halogen, oxyalkyl, oxyaryl, and oxyarylakyl;

R<sub>2</sub> and R<sub>9</sub> are each independently selected from the group consisting of H, H<sub>2</sub>, hydroxy, lower alkyl, cycloalkyl, aryl, alkylaryl, alkoxyalkyl, hydroxycycloalkyl, alkoxycycloalkoxy, hydroxyalkyl, aminoalkyl and alkylaminoalkyl; and

$R_3$ ,  $R_4$ ,  $R_{13}$  and  $R_{14}$  are each independently selected from the group consisting of H, lower alkyl, alkoxyalkyl, cycloalkyl, aryl, alkylaryl, hydroxyalkyl, aminoalkyl, and alkylaminoalkyl, or  $R_3$  and  $R_4$  together or  $R_{13}$  and  $R_{14}$  together represent a  $C_2$  to  $C_{10}$  alkylene, or  $R_3$  and  $R_4$  together or  $R_{13}$  and  $R_{14}$  together are: alkyl, hydroxyalkyl, or alkylene, or  $R_3$  and  $R_4$  together or  $R_{13}$  and  $R_{14}$  together are:

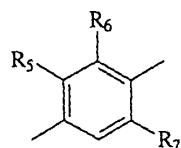


wherein  $n$  is a number from 1 to 3, and  $R_{10}$  is H or  $-CONHR_{11}NR_{15}R_{16}$ , wherein  $R_{11}$  is lower alkyl and  $R_{15}$  and  $R_{16}$  are each independently selected from the group consisting of H and lower alkyl;  
L is selected from the group consisting of:



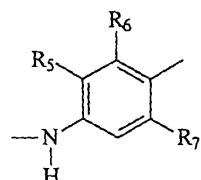
wherein R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, and R<sub>8</sub> are each individually selected from the group consisting of H, alkyl, halo, aryl, arylalkyl, aminoalkyl, aminoaryl, oxoalkyl, oxoaryl, and oxoarylalkyl;  
in a pharmaceutically acceptable carrier.

11. The pharmaceutical formulation of Claim 10, wherein L is:



A is N, B is NH, X is O, Y is CH, R<sub>1</sub>, R<sub>2</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub> and R<sub>14</sub> are each H, and R<sub>3</sub> and R<sub>13</sub> are each H<sub>2</sub>.

12. The pharmaceutical formulation of Claim 10, wherein L is:



A is N, B is NH, X is O, Y is CH, R<sub>1</sub>, R<sub>2</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub> and R<sub>14</sub> are each H, and R<sub>3</sub> and R<sub>13</sub> are each H<sub>2</sub>.